CMSC20DP02

-20V, 16mΩ typ., -20A Dual P-Channel MOSFET

General Description

The CMSC20DP02 uses advanced trench technology to provide excellent RDS(ON).This device is ideal for load switch applications.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
-20V	18mΩ	-20A

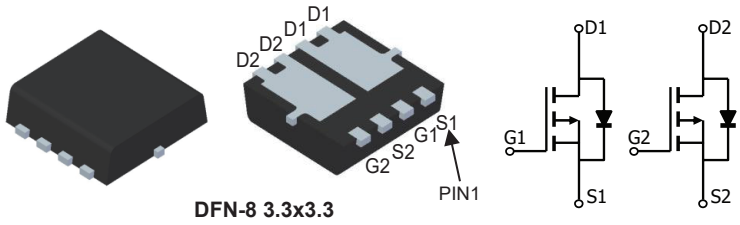
Applications

- DC/DC Conversion
- Load Switches

Features

- Dual P-Channel MOSFET
- Low ON-resistance
- Surface Mount Package
- RoHS Compliant

DFN-8 3.3x3.3 Pin Configuration



DFN-8 3.3x3.3

Type	Package	Marking
CMSC20DP02	DFN-8 3.3x3.3	20DP02

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	±12	V
I_D@T_C=25℃	Continuous Drain Current	-20	A
I_D@T_C=100℃	Continuous Drain Current	-14	A
I_{DM}	Pulsed Drain Current	-60	A
EAS	Single Pulse Avalanche Energy[1]	72	mJ
P_D@T_C=25℃	Total Power Dissipation	20	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	50	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	6	℃/W

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Electrical Characteristics (T_J=25℃ , unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250μA	-20	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-4.5V , I_D=-15A	---	16	18	mΩ
		V_{GS}=-2.5V , I_D=--10A	---	21	26	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D = -250μA	-0.5	---	-1.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-16V , V_{GS} =0V	---	---	-1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS} =±12V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=-5V , I_D=-10A	---	19.8	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	14	---	Ω
Q_g	Total Gate Charge	V_{DS}=-10V , I_D=-20A V_{GS}=-4.5V	---	30	---	nC
Q_{gs}	Gate-Source Charge		---	4	---	
Q_{gd}	Gate-Drain Charge		---	6	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=-10V, V_{GS} =-10V , R_G=6Ω I_D= -20A , R_L=15Ω	---	15	---	ns
T_r	Rise Time		---	12	---	
$T_{d(off)}$	Turn-Off Delay Time		---	62	---	
T_f	Fall Time		---	46	---	
C_{iss}	Input Capacitance	V_{DS}=-20V , V_{GS}=0V , f=1MHz	---	2000	---	pF
C_{oss}	Output Capacitance		---	250	---	
C_{rss}	Reverse Transfer Capacitance		---	150	---	

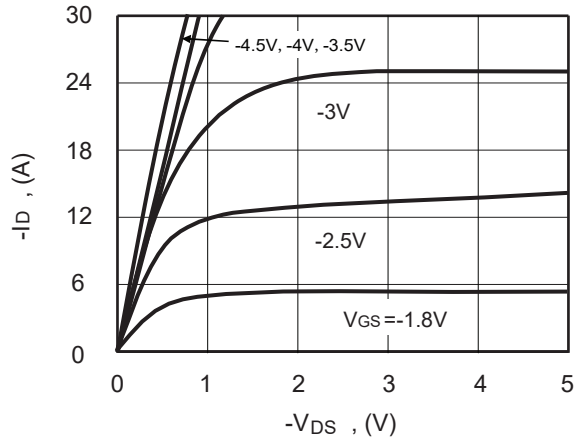
Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	-20	A
I_{SM}	Pulsed Source Current		---	---	-60	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=-10A ,T_J=25℃	---	-0.90	-1.2	V

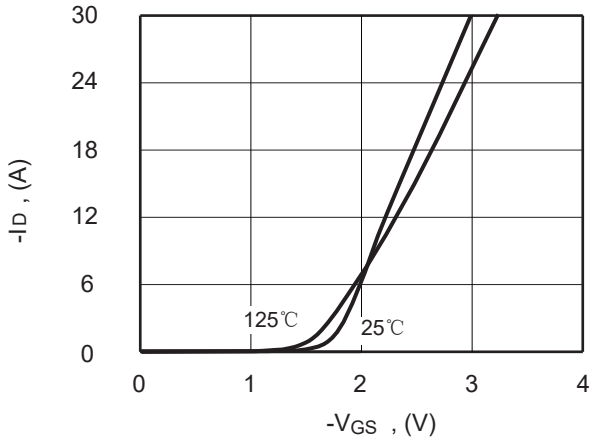
Note :

1.The EAS data shows Max. rating . The test condition is V_{DD}=-20V , V_{GS}=-10V , L=0.5mH , I_{AS}=-17A.

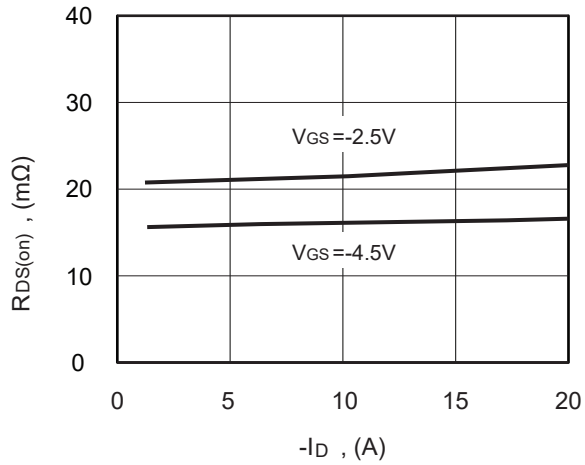
Typical Characteristics



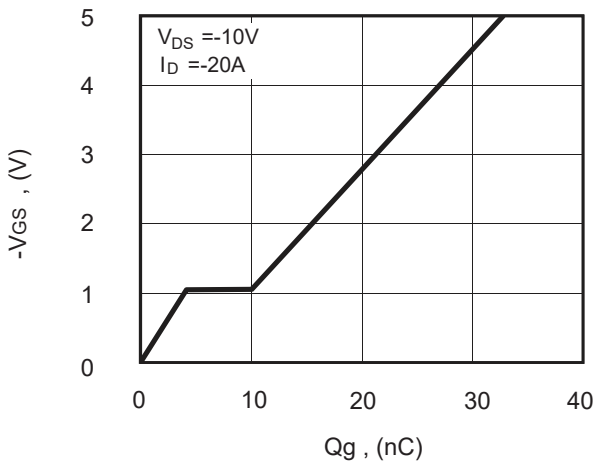
Output Characteristics



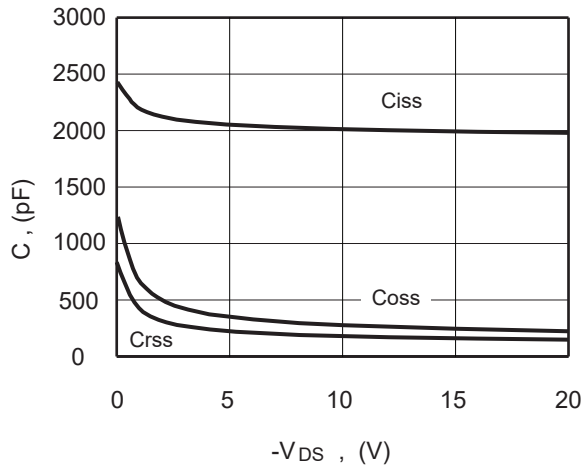
transfer characteristics



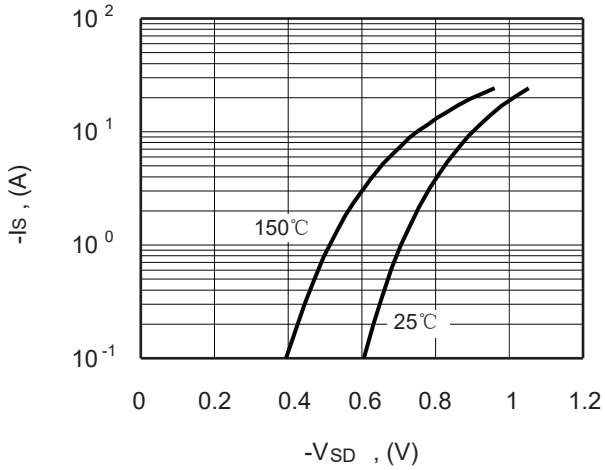
On-Resistance vs. Drain Current



Gate Charge Characteristics



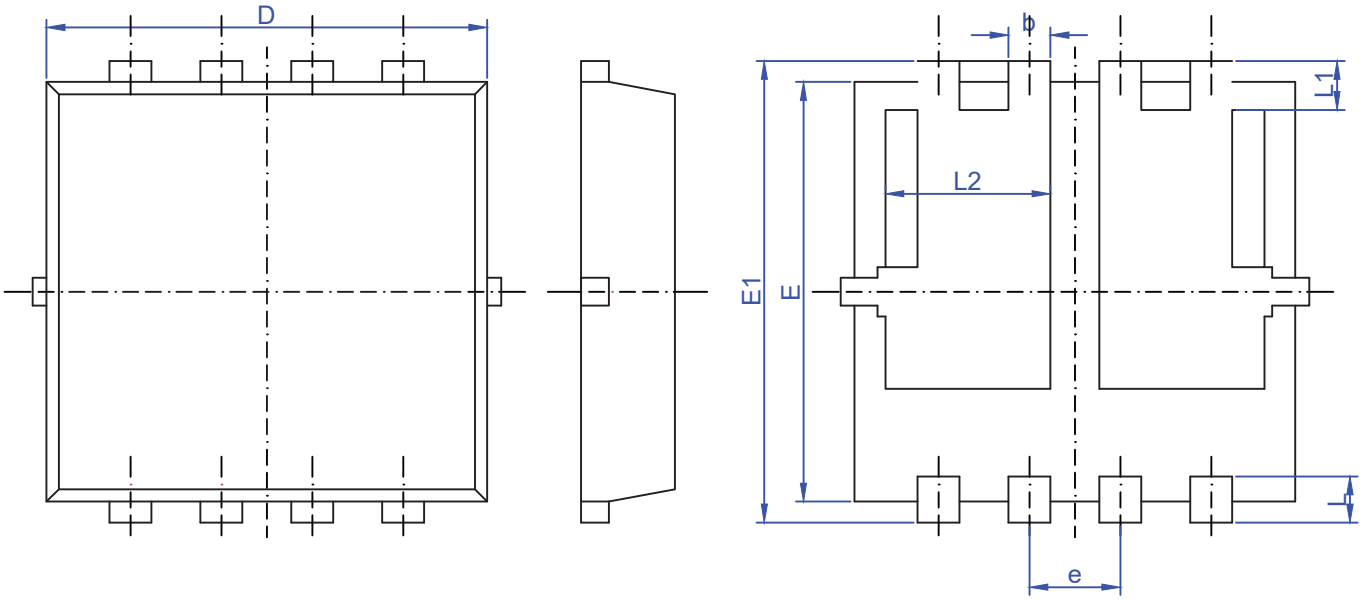
Capacitance Characteristics

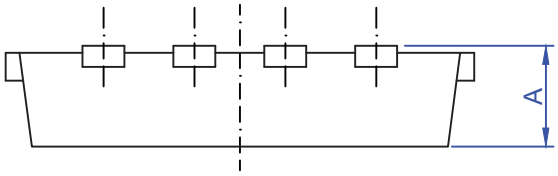


Body-Diode Characteristics

Package Dimension

DFN-8 3.3x3.3 Unit :mm





Dimensions In Millimeters			
Symbol	Min.	Max.	Ave.
A	0.700	0.900	0.800
D	3.000	3.200	3.100
E	3.000	3.200	3.100
E1	3.200	3.600	3.400
b	0.200	0.400	0.300
e	0.550	0.750	0.650
L	0.250	0.650	0.450
L1	0.255	0.655	0.455
L2	0.935	1.135	1.035

Note:

1. No tolerance ±0.10
2. The plastic package has no defects such as defects, shrinkage holes, cracks, bubbles, etc.